TO EVALUATE THE ROLE OF RADIOLOGICAL AND HISTOPATHOLOGICAL EXAMINATION IN THE DIAGNOSIS OF INTERSTITIAL LUNG DISEASES

Medicine

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ABSTRACT

Background : Interstitial Lung Disease encompasses a very large and complex group of more than 200 parenchymal pulmonary disorders of which the majority are rare. They are bunched together because they share clinical , radiographic, physiologic and pathologic features..A Multidisciplinary approach including clinical, radiological and histopathological examination is usually needed to make a correct diagnosis

Patients and Methods : 60 patients with clinical and radiological features of ILD who underwent Transbronchial Lung Biopsy were included in the study. Diagnosis was made on basis of Multidisciplinary approach including clinical, radiological and histopathological examination

Results : Among the patients studied Lung Biopsy was able to confirm the diagnosis of ILD in 95% of the cases . Idiopathic Pulmonary Fibrosis was the most common diagnosis in 23(38.3%) of the cases . HRCT alone was found to be inadequate in coming to a conclusive diagnosis

Conclusion : Despite the widespread use of HRCT , Lung Biopsy remains a superior diagnostic modality in diagnosis of ILD and should be used in patients wherever possible

KEYWORDS

INTRODUCTION :

Interstitial lung disease (ILD) encompasses a broad classification of parenchymal lung diseases, for which the diagnosis and treatment have evolved over time. Differentiating the various ILDs from IPF is very important because many of these diseases will respond to therapies such as steroids or limiting exposure to environmental antigens. IPF, on the other hand, can be progressive, and mortality rates are high. The current recommendation by the ATS and ERS is for lung biopsy in patients who are at acceptable risk to tolerate the procedure. However, with the advent of high resolution computed tomography(HRCT), more patients are diagnosed without a tissue diagnosis, effectively reducing the number of patients undergoing lung Biopsy. A Multidisciplinary approach is the gold standard for diagnosis

MATERIALS AND METHODS

Data were collected on 60 consecutive patients who underwent Transbronchial Lung biopsy for suspected interstitial lung disease at Department of Respiratory Medicine ,KIMS Hospital Bengaluru from November 2017 to July 2019

INCLUSION CRITERIA :

- Subjects of age 35-75 years.
- Patients with clinico-radiological signs of ILD.
- Newly diagnosed patients of ILDs.

Exclusion criteria :

- Patients with cardiopulmonary instability, severe hemorrhagic diathesis, HIV, Active Pulmonary Tuberculosis and on steroids or immunoregulator therapy.

Data Collection :

Both outpatients and inpatients were included. Patient demographics , Chest X-ray findings ,ANA profile,RA Factor, ANCA, HRCT reports, Histopathology Reports and BAL Cellular Analysis were collected

Data Analysis :

A two-sample t test was used to compare continuous data. Categorical data were analyzed with the chi-square test. A p value of < 0.05 was considered statistically significant

RESULTS:

In our study of the 60 patients studied 32(53.3%) were males and 28(46.7%) were females. Subjects ranging from 35-75 years of age were included in the study with most number of patients 23(38.3%) were between age of 50-60 years followed by 16(26.7%) who were in

61-70 year age bracket. Mean age of the study subjects was 55.15 years with a standard Deviation of 10.06 years

Table 1 : Gender Distribution of the study subjects

Gender	No. of patients	%
Female	28	46.7
Male	32	53.3
Total	60	100.0

HRCT was done for all the subjects with suspected ILD included in the study

Table 2 : HRCT patterns among the patients included in the study

HRCT Pattern	No. of patients	%
Ground glass and consolidation	24	40
Fibrosis	23	38.3
Nodules	13	21.6
Mosaic/Cysts	0	0
Total	60	100.0

A pathological specimen was obtained by transbronchial Lung biopsy in 100% of the subjects and a specific pathologic diagnosis was determined in 57(95%) patients after Histopathological Examination

Table 3 : Final Diagnosis of Suspected ILD Patients

Final Diagnosis	Number of Patients(%)
Idiopathic Pulmonary Fibrosis	23(38.3)
Idiopathic NSIP	7(11.6)
Hypersensitivity Pneumonitis	8(13.3)
Sarcoidosis	5(8.3)
CT-ILD	5(8.3)
Cryptogenic Organizing Pneumonia	4(6.6)
Others*	3(5)

*Drug induced and Chronic Eosinophilic Pneumonia

The specific diagnosis was included in the radiologist's differential diagnosis 56.7% of the time. An accurate diagnosis of IPF on HRCT was much more likely than a diagnosis of another interstitial lung disease (35% vs 10%) (p < 0.0001).

DISCUSSION :

The result of our study suggests that Idiopathic Pulmonary Fibrosis(38.3%) and Hypersensitivity Pneumonitis(13.3%) are the most common ILDs in patients being diagnosed in a tertiary care center

in Bangalore. The overall spectrum of ILDs is similar to various multicenter studies conducted in Europe, however there are certain subtle differences. Our results are surprisingly different from a recently published multicenter registry of ILDs from India which included 1084 patients and found Hypersensitivity Pneumonitis to be the most common ILD comprising 47.3% of the subjects studied. The reason for such variation can be because many subjects enrolled in the study were enrolled from small hospitals and individual clinics and the lung biopsy was performed on mere 7.5% of the patients. In contrast, our findings were similar to studies conducted at various centers in India (11%)-Kundu S et al., Germany (13.2%) and Belgium (13%).

Radiologic pattern recognition has been criticized as unreliable in predicting the pathology in Interstitial Lung Disease. Despite the acceptance of obtaining an HRCT scan from patients with ILD during initial stages, many patients with new onset of ILD may not have the characteristic patterns that allow a diagnosis to be made with a high level of confidence by HRCT alone. ILDs may be assessed radiographically using an approach suggested by Heitzman which classified the disease process into alveolar, interstitial and nodular patterns. In our study we differentiated the HRCT findings into 3 categories of (1) Ground glass and consolidation (40%), (2) Fibrosis (38.3%) and (3) Nodules (21.7%). The nodular category is distinctive and is a prominent feature in distinguishing some of the diseases like Sarcoidosis (80%) in our study. Similar to the study done by Naidich et al., our HRCT findings revealed a greater involvement of Lower lobes (53.3%). This finding can also be attributed to greater number of Interstitial Pulmonary Fibrosis patients in our study.

In our study Transbronchial Lung Biopsy was done for all 60 subjects with 57 (95%) confirming the diagnosis of Interstitial Lung Disease. In a study by Dirk Theegarten 91% of the patients suspected to have ILD were confirmed by histopathological examination.

Though the sensitivity of diagnosing specific ILD varied in different ILDs like IPF (91.3%), Sarcoidosis (100%) and Hypersensitivity Pneumonitis (50%).

CONCLUSION:

Interstitial Lung Diseases still remain a diagnostic nightmare and despite the advent of HRCT thorax, Histopathological Examination remains the most important investigation to make specific diagnosis in several ILDs except Idiopathic Pulmonary Fibrosis which usually doesn't need a histopathological correlation.

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